

**PROGRESS REPORT OF  
WOLF POPULATION MONITORING  
IN WISCONSIN  
FOR THE PERIOD  
APRIL – SEPTEMBER 2007  
& ANNUAL SUMMARIES FOR 2007**

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**ABSTRACT**

Annual spring and summer wolf survey and monitoring activity was conducted in Wisconsin in 2007, as has been done since 1980. Thirty-one wolves were live-captured for monitoring and 25 were fitted with radio collars. A total of at least 142 wolf packs were detected in the state. A total of 57 wolves were on the air during the summer period; during the period 8 died and signals were lost on 5 wolves. A total of 75 wolves were radio tracked during parts of the year. Dispersal was detected on at least 24 different wolves in the state. Through howl surveys, wolf pups were detected in 15 of 50 wolf packs. A total of 90 wolves were found dead in the state and the most important mortality factors were euthanized depredators, vehicle collisions, and illegal kills. Wolf depredations occurred on 30 farms and 38 wolves and hybrids were euthanized on 17 farms. Wolf kills included 30 cattle, 6 sheep, 1 horse, and 13 dogs; wolves also caused injuries to 6 cattle, 4 horses, and 9 dogs

## INTRODUCTION

Wolves recolonized Wisconsin in the mid 1970's after an absence of about 15 years (Wydeven et al 1995). The Wisconsin Department of Natural Resources (DNR) has monitored wolves since 1979, and population monitoring efforts were reinforced in the 1989 recovery plan (Wisconsin DNR 1989), and the 1999 wolf management plan (Wisconsin DNR 1999). Monitoring in spring and summer consisted of live trapping, radio collaring, radio tracking and howl surveys. Winter monitoring includes snow tracking of wolves, radio tracking of collared wolves, and estimations of the state wolf population (Wisconsin DNR 1999). Surveys from winter 2006-2007 indicated a state wolf population of 540-577 wolves, and 528-560 wolves existed outside of Indian Reservations (Wydeven et al. 2007). This is the fourth year the wolf population has exceeded its management goal of 350 wolves outside of Indian reservations. State delisting was completed on August 1, 2004, and wolves were listed as Protected Wild Animals at that time.

The U.S. Fish and Wildlife Service down listed wolves in Wisconsin from federally endangered to threatened on 1 April 2003 (Federal Register Vol. 68, # 62). Therefore, authority was provided the state of Wisconsin and tribes to use lethal control on problem wolves. A federal delisting process was begun in July 2004, but a federal court in Oregon reversed the 2003 reclassification, causing wolves to again be designated federally endangered on January 31, 2005, and tabling the federal delisting process. As a result of being relisted as endangered, the Wisconsin DNR was required to obtain a special permit from the U.S. Fish and Wildlife Service to conduct lethal control activities on problem wolves. Special permits were issued in April, 2005 and 2006 allowing WDNR to remove a limited number of wolves at depredation sites. But permits were lost both years due to court challenges in September 2005, and August 2006. The permits were in affect from 1 April-13 September 2005 (166 days), and 24 April – 10 August 2006 (108 days), thus restricting WDNR and USDA-WS from taking depredating wolves.

The U.S. Fish and Wildlife Service began a new federal delisting process on 27 March 2006, for the Western Great Lakes Distinct Population Segment (DPS) of gray wolves. The DPS included all of Minnesota, Michigan and Wisconsin, as well as portions of Ohio, Indiana, Illinois, Iowa, South Dakota, and North Dakota. The delisting rule was finalized on 12 March 2007(Federal Register Vol.72, #26). [http://www.fws.gov/midwest/wolf/2007delisting/2007delist\\_fr.pdf](http://www.fws.gov/midwest/wolf/2007delisting/2007delist_fr.pdf)

The current report covers wolf population monitoring activity from April through September 2007, as well as annual summaries for depredation, mortalities, and total captures in 2007. This represents the first survey work and management activity on wolves in Wisconsin after federal delisting was completed, and completely under state management. These surveys also represent the beginning of the 5-year post-delisting monitoring required by the federal government.

## ACKNOWLEDGEMENT

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## METHODS

Wolves were live trapped and radio collared following procedures of Mech (1974) and Wydeven et al. (1995). Most trapping was done from early May through mid-September mostly using foothold traps (Kuehn et al. 1986), but some limited trapping was done with cable restraints in winter (Olson and Tischaefer, 2004). Once radio collared, wolves were normally located once per week by WDNR pilots, but because of reduced funding were flown only once or twice a month during the summer period. Weekly flights would be resumed during the winter survey period.

Home range area for the summer period (15 April – 14 September) was determined from the minimum convex polygon (Mohr 1947). Normally, isolated radio locations over 5 km from other points would be considered extra-territorial moves as done by Fuller (1989). However, because of the small number of radiolocations available for this monitoring period, locations greater than 5 km from other points were considered part of the home range when they fell within or very near the pack territory boundary as mapped in spring 2007, and were not within another pack's territory. When 2 separate clusters of radiolocations existed with regular travel between them, areas in between were considered part of the home range regardless of distance, as long as both clusters did not occur in another pack territory. Home range areas were calculated for wolves that occupied stable areas, and did not include wolves that were dispersing.

Howl surveys (Harrington and Mech 1982) were used to determine pup production, location of rendezvous sites, summer location of non-collared packs, and to determine the presence of new packs. Howl surveys are useful for determining occurrence of wolves and presence of pups, but are not reliable for an accurate count of wolves beyond 2-3+ pups and 2-3+ adults (Harrington and Mech 1982).

## RESULTS AND DISCUSSION

A total of 31 wolves were captured for monitoring, and 25 were fitted with radio collars in 2007 (Table 1). Most captures for collaring occurred during spring and summer, but 6 wolves were caught by coyote trappers in fall and winter (617M, 618M, 629F, 633M, 638F, and 635F), and one was captured in early winter with cable restraint (649M). Wolves were captured from at least 23 separate packs, although 2 or 3

were from packs not previously detected (Pincherry, Weirgor Lake, and possibly a Bradley Pack east of the Somo River Pack), thus wolves were captured from about 16% of packs detected in winter 2006-2007. Live captured wolves included 6 adult males (mean for 5 of 78 lbs  $\pm$  6.8 SD), 12 adult females (mean 67 lbs.  $\pm$  9.1 SD), 2 yearling males (56 & 65 lbs.), 5 yearling females (mean 60.2 lbs.  $\pm$  5.9 SD), 3 male pups (12-58 lbs.) and 3 female pups (30-46 lbs.).

During winter 2006-2007, 138 packs and 3 lone wolves occupying regular territories were detected in Wisconsin (Figure 1). During survey work in summer and fall at least 4 new packs were detected including the Pincherry Pack in south-central Vilas County, Weirgor Lake Pack in southwest Sawyer County, the Bradley pack east of the Somo River in Lincoln and southern Oneida Counties, and the Starlight Pack in central Jackson County. Control actions removed 6 wolves (2 yearlings and 4 pups) in the Amnicon River area from either a new pack or nearby pack that recently established in this area of northern Douglas County. Most packs occurred in heavily forested areas of northern (Zone 1) and central (Zone 2) Wisconsin although the Amnicon River Pack along with Poplar River and South Range occurred in areas of mixed forest and farmland in Zone 1, as did several packs in Zone 3. The wolf survey system used in Wisconsin is probably most reliable in detecting wolves in forested areas, but less suited for detecting wolves in agricultural areas and relies on reports of wolf observations and depredation investigations to detect wolves in such areas.

During the summer survey period (15 April – 14 September 2007), 57 wolves were monitored in 48 packs in the state (Table 2). Total packs with collared wolves include 46 packs detected last winter (33%), and 2 new packs (Weirgor Lake and Starlight). Collared wolves including 53 wolves in Zone 1 (44 packs), 3 wolves in Zone 2 (3 packs), and 1 wolf (1 pack) in Zone 3. Eight collared wolves died during the survey period, and signals were lost on 5 wolves. By the end of the summer monitoring period, 44 wolves remained on the air including 41 in Zone 1, 3 in Zone 2 and 0 in Zone 3. Collared wolves monitored over the summer included: 21 adult male, 32 adult females, 1 yearling male, 3 yearling females, and 1 pup male. A total of 75 collared wolves were monitored in 2007.

Radio collared wolves were relocated up to 11 times during the summer survey period, and occupied home range of up to 56 square miles, although numbers of radio locations were inadequate for describing summer home range area (Table 3). The largest home range was for wolf 624F (56 square miles) suspected to be from the Chain Lake Pack, but possibly starting to disperse. Four other wolves were detected across home range areas of >30 square miles, which probably represent the more normal territories of wolves.

### Dispersing Wolves

Wolf 307M was captured as a pup male on 23 September 1999 in the Dead Creek Pack in Jackson County. It was last located in western Juneau County on 28 March 2000. It was found dead in Houghton County, Michigan with its collar on mortality signal on 23 February 2007, having died from unknown causes. The location was about 196 miles north of its last location in central Wisconsin.

Wolf 495M was captured as a pup male in the South Averill Creek Pack of western Lincoln County on 27 2004. In winter 2006-2007 he seemed to have joined or established a new territory to the east of the South Averill Creek Pack. In summer he again moved to the west and by fall seemed to have joined the North Averill Creek Pack directly north of the South Averill Creek Pack.

Wolf 520F was captured as a yearling female in the Foxboro Pack of western Douglas County on 13 June 2006. In summer 2007, she seemed to have shifted her home range area west into Carlton and Pine Counties, Minnesota, but by winter was again visiting previous home range areas in Douglas County. Possibly her home range shift was temporary.

Wolf 521M was captured as a yearling male in the Bearsdale Pack area of southwest Bayfield County on 31 October 2004. He was found dead in the southern part of the Rainbow Lake Pack area north of Pigeon Lake on 12 June 2007, probably dead from natural causes. The location was about 1.5 miles north of the Bearsdale Pack territory and about 6 miles from the center of the territory. Possibly 521M was attempting to join the other pack, or was perhaps killed trespassing in the adjacent territory.

Wolf 556M was captured as an adult male in the Moreland Lake Pack area of northwest Bayfield County on 26 May 2005. His territory gradually shifted westward across Highway 27 into northeast Douglas County, near Lake Nebagamon. On 29 August 2007 he was found north of Highway 2, east of Maple and about 4.7 miles north of his summer home range area. On 10 September he was captured and euthanized on a farm having wolf depredations 7 miles further north and 10.5 miles north of his summer home range area.

Wolf 561F, was captured as a yearling female in the Flag River Pack in northern Bayfield County on 7 June 2006. Throughout the winter of 2006-2007 she traveled across northern Bayfield County across the Flag River, Siskiwit Lake, and part of Twin Lakes pack areas. On 5 April 2007 she was located 13 miles to the southeast of the Flag River territory center, and appeared to be dispersing to the southeast. She was rediscovered in the Siskiwit Lake territory in July 2007. Wolf 561F seemed to have settled into the Siskiwit territory during the summer, but by later October she again began wandering to the south toward the base of the Bayfield Peninsula.

Wolf 569F, was captured as a yearling female in the Wildcat Mound Pack in eastern Jackson County on 15 June 2006. She remained in her home territory through 8 November 2006, but was lost for 2 months after that until she was rediscovered in the Dandy Creek area, 14 miles southeast of her original capture location on 19 January 2007. She remained in the Dandy Creek area through 20 March 2007, when she began moving to the west. Wolf 569F's last location during the winter study period was on 9 April, 9 miles south of her original capture on the south side of Jackson County, east of I-94. She seemed to have established a new territory in the area, which was named the Starlight Pack, in summer.

Wolf 572M was captured as an adult male in the Little Rock Lake Pack in Vilas County on 24 May 2006. He remained in the Little Rock Lake pack territory until late spring 2007. He was last detected in the Little Rock Lake territory on 14 May 2007, and on 21 June 2007 was detected 11 miles to the south in the North Willow area. He spent the summer wandering south, west and north of the Willow Flowage and by 3 October 2007 seemed to have settled in the Little Rice River area, 23 miles south of the center of his original territory.

Wolf 574M, was captured as an adult male in the Dunbar Pack of Marinette County on 11 June 2006. By early December 2006, he started spending time in the Homestead area of Florence County, just north of the Dunbar territory. He spent most of the remainder of winter in this area, apparently with a severe case of mange. The wolf was frequently being seen by people along roadways and appeared to have lost fear of humans. On 27 June 2007 he was trapped and euthanized because of his unusual behavior.

Wolf 607M, was captured as a pup male in the Thornapple River Pack area of eastern Sawyer County on 24 June 2006. By 18 December 2006, at about 9 months old he began traveling well outside the pack area, traveling 18 miles southwest of his original capture site. It was not known if he was traveling by himself. During winter he made extensive movements through southern Sawyer and northern Rusk County, as far as 28 miles west and 26 miles southwest of his original capture location. He was last detected on 23 April 2007, 20 miles west of his original capture site.

Wolf 615F, was captured as an adult female in the Bearsdale Pack of western Bayfield County on 10 June 2007. In fall she began to travel near the edge of the territory, and by late November 2007, occupied a small wedge of land north of Bearsdale, east of the Rainbow Lake Pack, and west of the Bibon Swamp pack. She was seen with another wolf in this area on 3 and 19 December 2007.

Wolf 624F, was captured as an adult female somewhat east of the Chain Lake pack area in eastern Douglas County on 1 June 2007, but roamed broadly through the territory over summer. By late October she began traveling outside the Chain Lake area, and by 15 November she had settled into an area north of Minong Flowage to the west. She was found dead on 10 December 2007, 9 miles west of the center of the Chain Lake territory, apparently due to mange.

Wolf 627F, was captured as an adult female on 28 June 2007 in the Rainbow Lake Pack of western Bayfield County. She was apparently lactating at the time. Soon after her capture, 627F moved to the eastern edge of the territory, and through the rest of the summer and into fall, occupied a small area north of the Rainbow Lake Wilderness and along the White River. She was seen with one other wolf on 3 December and 27 December 2007. This home range area is wedged between the Rainbow Pack on the west, Bibon and Mason Pack on the east, and Ino Pack on the north.

Wolves 605F, 613F, 620F & 622F, were all captured in spring 2007 in the Ghost Lake, North (or South?) Empire, Namakagon Barrens, and Echo Valley packs respectively. All 4 went off the air soon after capture, due either to dispersal or possible collar failure. Reduced flights in summer due to budget limitations may have contributed to loss of the animals.

Chippewa County female, was killed along U.S Highway 53 west of Chippewa Falls and just north of the Chippewa River on 16 April 2007. A male, apparently a hybrid was killed just 2 miles to the south on the previous day. The Chippewa County female was 24 miles west of the nearest packs in eastern Eau Claire County

Monroe County Male, young adult or yearling male was killed by a vehicle along I-90/94 on 19 April 2007 near Tomah. The location was about 8-9 miles south of the nearest packs.

Shawano County Female, adult was killed on 17 August 2007 along Highway 29 about 9 miles south of the nearest pack on the Stockbridge reservation to the north.

Dane County Female, yearling was found dead from shooting on 1 October 2007 along a roadway near Mazomanie, and 58 miles south of the wolf packs near Necedah NWR.

Trempealeau County Female, was shot by a bow hunter on 14 October 2007 near Ettrick, about 25 west of the Fort McCoy Pack.

Dodge County Female, adult was hit by a vehicle on 19 October 2007 near Waupun, 56 miles southeast of the nearest pack in the Colburn Wildlife Area in Adams County.

Iowa County Male, adult was shot on 20 October 2007 near Avoca, about 62 miles south of the nearest packs on Necedah NWR.

Adams County Male, was trapped and shot on 2 November 2007 north of Wisconsin Dells, and about 18 miles southwest of the Colburn Pack.

Sauk County Male, adult was killed by a bow hunter on 10 November 2007 west of Portage along the Wisconsin River. It was killed about 34 miles south of the Colburn Pack, the nearest pack to the north.

Clark County Male, adult was found dead from shooting on 20 November 2007 along a town road south of Neillsville, and about 4 miles southeast of the Wedges Creek Pack. Because the wolf had been shot, it may not have traveled to this location on its own.

Winnebago County Male, adult was shot by a bow hunter southwest of Oshkosh on 29 December 2007. On 28 December a wolf was sighted in southwest side of Oshkosh in a snowstorm, that appeared to be the same animal based on analysis of photos. The death site was 50 miles to the east of the nearest wolf pack (Colburn Pack).

### Summary of Howl & Pup Surveys

Howl surveys were conducted in 50 packs over the summer and wolves (adults or pups) were detected in 21 packs (Table 4). A total of 31-33 pups were heard in 15 packs, plus 57 pups were detected through direct observations in 26 packs. Overall, pups detected in packs by both howl surveys and observations was 84-86 pups in 38 packs or a mean of 2.2-2.3 pups per pack. If one unusually high observation of 11 pups in one pack were eliminated, (the observation may have been incorrect), then 73-75 pups were detected in 37 packs, or mean of 2.0 pups per pack. This represents the lowest mean pups per pack detected in recent years, which have averaged 2.2 to 3.0 pups per pack. Overall, wolves were heard at 49 of 730 howling stops for a wolf detection rate of 6.7 %, lower than rates in 2006 (9.2%) and 2005 (6.9%). Howl success was especially low for Zone 1 where wolves were detected on only 11 of 400 howl stops (2.8%). It was unclear if pup production had declined or if conditions were poor for howling during the summer. No major disease outbreak was known to be occurring, although some wolves were being affected by mange.

### Reported Wolf Observations

A total of 50 and 53 observations of wolves were reported respectively for April-June and July-September quarters in 2007 (Table 5, Figure 2). Observation rates for the same quarters were 72 and 47 in 2006, 67 and 74 in 2005, and was as high as 75 and 84 in 2002. Despite continued growth of the wolf population, reports of wolf observations have declined, probably because observations of wolves are likely becoming more routine and people are less likely to report seeing wolves. These reports are still useful for detecting wolves in new locations and directing survey activities. Wolf observations were reported from 29 Wisconsin counties, although some include incorrect identifications, especially outside of normal wolf range. Counties with highest observations included Iron (18), Marinette (8), Vilas (7), and Washburn (7).

### Wolf Mortality and Health

Ninety wolves and 9 wolf-dog hybrids (initially suspected as wolves) were found dead in Wisconsin in 2007. Also a Wisconsin wolf that had dispersed to Michigan was found dead in 2007. Seventeen collared wolves and 2 collared wolf-dog hybrids (identities not clear at the time of capture), were found dead in Wisconsin, including 1 Michigan wolf found dead near the state border.

Sixteen wolves with radio collars died while actively being monitored by the WDNR, and mortality included: 2 (12%) illegally shot, 3 (19%) vehicle collisions, 1 (6%) shot protecting livestock, 3 (19%) euthanized on depredation and human safety concerns, 1 (6%) capture related, 2 (12%) disease and starvation, 1 (6%) natural unknown, and 3 (19%) unknown. Thus at least 62% of mortalities were human

caused. A total of 75 wolves were on the air in 2007, thus the crude mortality rate was 21% for the year, a relatively low rate. Percentage of wolves illegally killed declined from 67% of mortality among collared wolves in 2006, to only 12% in 2007.

Mortality among the total sample of 90 wolves found dead included: 9 (10%) illegal shootings (3 by bow), 1 (1%) illegal trapping, 29 (32%) vehicle collisions (1 by train), 35 (39%) euthanized depredators, 3 (3%) shot attacking domestic animals, 1 (1%) capture related, 1 (1%) injured and euthanized, 3 (3%) mange and other disease, 1 (1%) other wolves, 1 (1%) unknown natural, and 6 (7%) unknown. For the overall sample, 87% was human caused mortality, but the sample is biased by vehicle collisions and euthanized depredators that are more easily detected than are natural mortality. The illegal kill of 10 wolves was less than the 17 detected in 2006, and only 1 wolf was found killed during the 2007 regular firearm deer season, compared to 9 in 2006. With delisting, it appeared that illegal kill declined, especially in major wolf range in zones 1 and 2. Five of the illegal kills in 2007 were in zones 3 and 4 outside of major wolf range and 4 were mistaken for coyotes and reported by the shooters.

Nine wolf-dog hybrids were found dead in the state in 2007, and included 4 vehicle collisions, 2 shot, and 3 euthanized at depredation sites. Wolf 461F was caught as a pup in a coyote trap on 20 November 2002 in the North Willow Pack in western Oneida County. She was suspected of being a hybrid at the time of her capture, but we decided to collar her and monitor her movements and behavior in the wild. She remained on the air in the North Willow area for 5 years and apparently roaming with members of that pack. She was shot on 20 November 2007 during the regular firearm deer season.

A total of 35 wolves and 3 apparent wolf dog hybrids were captured and euthanized from depredation sites and human safety situations. Three wolves were also shot by landowners protecting domestic animals on their properties. This was the first year this authority was available for landowners. Total of euthanized problem wolves by WS and landowners (38) represented 7.0% of the previous winter population of 540 wolves, although 5 wolves euthanized were pups born in spring 2007 after the winter count.

Mange was detected in 7 (25%) of 28 wolves live-captured in 2007 for monitoring, and 3 had severe cases of mange. Mange was also detected on 5 (13%) of 38 wolves captured at depredation sites, and 2 were severe. Traditionally, all mange in Wisconsin was considered Sarcoptic mange, but an adult male from the Tranus Lake pack in Washburn County, found dead from vehicle collision on 15 July 2007, had Demodectic mange. At least 2 wolves with severe Sarcoptic mange were killed by vehicle collisions, and one wolf with severe mange was euthanized (574M) because it seemed to have lost fear of people. Possibly mange is on the rise in Wisconsin wolves.

### Wolf Depredation

Wolf depredation occurred on 30 farms in Wisconsin in 2007 (Table 7a). Total depredations included 30 cattle killed (28 calves) and 6 injured (all calves), 6 sheep killed (2 lambs), 1 horse killed and 4 injured (2 colts). A total of 23 packs (17% of state packs) caused depredations on livestock in 13 counties. Although numbers of farms with depredations grew from 25 in 2006 to 30, total cattle killed declined from 35 to 30, in part due to WS being able to remove depredators throughout the period of depredations, and landowners being able to shoot wolves attacking livestock. Farms with depredations included 25 in Zone 1, 0 in Zone 2, and 5 in Zone 3.

Seventeen cases of wolf depredations on dogs occurred in 2007, including 5 cases of pets attacked near homes and 12 cases of dogs attacked in hunting and training situations (Table 7b). A total of 13 dogs were killed and 9 were injured by 14 packs (10% of state packs). Among hunting dogs, 11 were killed and 5



were injured, and for dogs attacked near homes 2 were killed and 4 were injured. Dog attacks declined from 2006 when 25 dogs were killed and 10 were injured. Five packs that depredated on dogs, also depredated on livestock (4% of state packs; Amnicon River, Big Rib, Blue Hills South, Morrison Creek, and Skinner Creek).

A total of 46 control actions were conducted by USDA-WS, WDNR and landowners on depredating wolves in 2007 (Table 8). Complaints with verified threats or depredations to livestock we received from 41 farms, including 10 chronic farms, 20 first time farm depredations, and 11 farm threats. Non-lethal methods were attempted at 9 farms. Trapping was attempted at 28 locations and 38 wolves were trapped and euthanized (3 were probable hybrids), plus 2 wolves were collared and released for monitoring at harassment sites, but one was later captured when depredations began, and 2 young pups were trapped and released. Distributions of wolf control cases included 38 in Zone 1, 1 in Zone 2, and 7 in Zone 3. During 2007 USDA-WS received 170 wolf complaints including, 51 verified (confirmed and probable) wolf attacks on domestic animals, 22 verified threats and harassments of domestic animals, 2 verified human safety threats, 2 wolf damage to private property, 33 coyote attacks, 6 dog attacks, 1 bear attack, 1 unknown predator, 5 stillborn and other natural, and 46 unconfirmed. Complaint counts are higher than wolf cases in table 7a and 7b because more than one complaint was received from some farms and home sites within the year.

#### PLANS FOR NEXT STUDY PERIOD

Efforts will be made during winter to observe radio collared wolves from the air and obtain accurate counts on these packs. Snow track surveys will be used by DNR and other agencies, as well as volunteer trackers to attempt to locate all non-collared packs on the ground, and obtain accurate counts on each pack. Intense collection of public observations of wolves will continue to supplement survey information and direct survey efforts. Once wolf depredations start in late winter or early spring, control trapping will be conducted by USDA-Wildlife Services. Also control trapping may be done in proactive control areas. Permits will be issued to landowners with wolf depredations and in proactive control areas

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*Note: This report is a preliminary progress report and should not be construed as a finalized publication. Some of the numbers of pack size, composition, population figures, and other information may change as more data becomes available. Persons wishing to cite figures within the report should consult with the authors.*